

- aa. Supraglenoid large.
Antilocapra.
- XVIII. Supraglenoid, postglenoid, mastoid and postsquamosal.
a. Supraglenoid small.
Hippopotannus, Charopsis.
- aa. Supraglenoid large.
Giraffa.
- XIX. Supraglenoid, postglenoid, postparietal and postsquamosal.
a. Supraglenoid small; mastoid not grooved.
Anchitherium.
- β. Supraglenoid large, mastoid grooved.
Hippotherium, Protohippus, Equus.
- XX. Supraglenoid, postglenoid, postparietal, postsquamosal and mastoid.
Cervus, Oreus, Ovis.

Biographical Notice of Professor Joseph Henry. By Fairman Rogers.

(Read before the American Philosophical Society, February 20, 1880.)

The admirable memoir of Prof. Joseph Henry, prepared by Mr. William B. Taylor, and read before the Philosophical Society of Washington, October 26, 1878, is so exhaustive both as to his scientific labors and the incidents of his life that little can be added to it until at some future time a biographer will undertake the preparation of a more voluminous life and letters.

As to his scientific career, the memoir deals principally with his earlier work as being more directly personal, and the results of his own manipulation and experiment, while his later days were devoted to the direction and coördination of the work of others.

Regret has frequently been expressed by the scientific friends of Prof. Henry, that his acceptance of the Secretaryship of the Smithsonian, and his devotion to the interests of that Institution had withdrawn him from those lines of original research, in which he shone so conspicuously, and while these regrets are perhaps well-founded, it is a question whether he could possibly have been of more value to science under any circumstances other than those in which this later part of his life was passed.

In his position his influence upon American Science was great and varied. He was a constant and shining example before the eyes of the younger scientific men of an unselfish devotion to the interests of science for itself, and not for self aggrandizement. Honest in the widest and deepest sense of the word, he never permitted expediency, self-interest or passion to interfere with the search for truth, and his clear and simple expressions on such subjects put it out of the power of those who consulted him to do otherwise than follow the example which he set them.

Filling for years a position in which, without violating any of the principles which many, nay, most men consider quite sufficient for their moral guidance, he might have used his knowledge for the furtherance of his own selfish ends, he never swerved for an instant from his determination to examine and decide all matters from the purely scientific point of view, unbiassed by any considerations as to how his decisions might affect the interests of any one, and the hosts of inventors and projectors who are constantly hovering around Government headquarters found him a sentinel whom it was impossible to cajole or to pass without that countersign of true worthiness which his trained mind was quick to recognize.

While he no doubt, had he remained in his laboratory, would have added year after year to the knowledge of the world by original research, he did so much in his prominent position to encourage and assist such work by others, that it may be fairly presumed that the results were equally good. While there are many men who in the solitude of the laboratory can carry on important investigations, there are few who join to an accurate scientific training the ability to impress and to direct men who are their scientific equals, the lofty incorruptibility of character, and the clear-sighted power of grasping a subject which he possessed.

In this respect as well as by his official position he much resembled his friend Alexander Dallas Bache with whom he was intimately associated for the many years during which they both lived in Washington.

Brought into continual personal contact with the active scientific men of the day, they exerted an incalculable effect upon what we might call the scientific morals of the younger generation, and always trod themselves, the paths which alone lead to honor.

Single minded and steadfast in their purposes, they would listen to no projects which had about them the taint of selfishness or corruption, and the man who met them with any project which would not bear the full light of day soon felt that he had made a grievous mistake, and retreated in confusion.

In writing thus, I do not mean that Prof. Henry frowned only on those projects which the average sentiment characterizes as dishonest, that was his clear and evident duty, but he also taught that scientific work had for its object the development of truth, and that all the petty considerations of claims of priority, and the jealousies which so often embitter the relations of scientific men were unreal and unimportant, purely secondary matters.

It is somewhat doubtful whether any one can occupy again a position in the American scientific world exactly similar to his. Commencing his scientific career at a time when it was quite possible for a great man to know the whole range of the physical sciences in a way more or less complete, he was looked up to by all men working in those fields as an acknowledged authority, and his influence was thus very extensive. Now these fields have become so large and varied that it is hardly possible for any one to become more than a specialist, and the power of coördination

which Prof. Henry in common with Bache and Agassiz, exercised is gone with them, and must perhaps now be concentrated in Academies and Societies.

Prof. Henry's closest connection with the American Philosophical Society was during his residence at Princeton, from the year 1832 to 1846, during which period he made constant communications to the Society, and attended its meetings regularly, forming and cementing those friendships with many Philadelphians which lasted through his life. This was the time of his greatest activity in original work, and as Faraday, in England, Biot and Becquerel, in France, and Riess, in Germany, were engaged in parallel investigations of the greatest importance, the period was one of the most interesting in the annals of science.

Upon his election, in 1846, as head of the Smithsonian Institution, his opportunities for direct private investigation in his own laboratory ceased, but he had improved facilities for controlling extensive investigations through correspondents, which added largely to scientific knowledge, and some of his later personal researches, such as those relating to lighthouse oils and to sound signals, were of the greatest importance.

Elected President of the National Academy of Sciences, in 1868, after the death of its first President, Prof. Bache, he exercised in its affairs the same strong, sensible, quiet influence that characterized his usual action, and his last formal connection with it, only a few weeks before his death, was marked by two incidents, in themselves of much interest.

His waning powers and several sharp attacks of illness had warned him that his life was drawing towards its close, and one of his intimate friends, with whom he sometimes took counsel about his family affairs, found that he was troubled by the fear that his family might suffer from straightened circumstances after his death. Without giving him the least intimation of what was intended, a fund of forty thousand dollars, in one thousand dollar subscriptions, was quickly made up among his friends and admirers in several Eastern cities, principally in Philadelphia, and placed in trust for the benefit of his wife and children during their lives, with the proviso that after their death it should go to the National Academy of Sciences, and form "The Joseph Henry Fund," the interest to be applied to assisting investigators in original research.

Nothing could have been more pleasant than the way in which Prof. Henry took this compliment. He appreciated exactly the spirit in which the movement was made, and said that the only source of trouble in his mind was now removed. He frequently referred to it, and enjoyed drawing a parallel between his life and that of his intimate friend, Bache, remarking that they had worked together, had occupied high scientific positions under government together, had both been Presidents of the Academy, and that now the chain would be unbroken, for he would leave behind him, in the hands of that Academy "The Joseph Henry Fund," as Bache had left "The Bache Fund."

The presentation of this fund to the Academy formed a conspicuous part

of the business proceedings of the Session of April, 1878, and the President's address, which was his last formal communication to that body, touched in the most feeling manner upon the compliment paid to him.

The other incident was the exhibition to the Academy, by Mr. Edison, through special invitation, of the phonograph, and of a number of improvements upon the telephone and kindred instruments. A private exhibition of them was made in Prof. Henry's private rooms in the Smithsonian Institution, and nothing could have been more interesting than the spectacle of the famous old physicist studying with the most intense interest and the clearest appreciation, the very latest developments of the sciences to which he had devoted his life, and the application of those investigations, in many of which he had led the world fifty years before.

He felt, and those about him felt, that it was probably the last time that he would have any direct connection with the active science of the world, and so it proved; for, within less than four weeks, his friends were called upon to mourn his death.

The funeral services of Prof. Henry were the occasion of a large gathering of the scientific men of the country, and of others who, prominent in their respective offices, admired the pure spirit which had passed for so many years unscathed by the breath of scandal, through the temptations of official life; and, on a sunny May afternoon, his remains were deposited in the beautiful cemetery which overlooks the city of Washington, in which he spent so many years, full of honor.

Within a year of his death, the Congress of the United States paid to the memory of Prof. Henry its highest compliment. Both Houses passed on the 10th of December, 1878, the following resolution: "That the Congress of the United States will take part in the services to be observed on Thursday evening, January 16, 1879, in honor of the memory of Joseph Henry, late Secretary of the Smithsonian Institution, under the auspices of the Regents thereof, and for that purpose the Senators and Members will assemble on that evening in the Hall of the House of Representatives, the Vice-President of the United States, supported by the Speaker of the House, to preside on that occasion."

The exercises which were held in a crowded auditorium, consisted in an opening prayer by Dr. McCosh, of Princeton College, and addresses by Senator Hannibal Hamlin, Senator R. E. Withers, Prof. Asa Gray, Prof. William B. Rogers, Representative James A. Garfield, Representative S. S. Cox, and General W. T. Sherman with the concluding prayer by the Rev. Dr. Sunderland, Chaplain of the Senate.

With this mention of such a fitting tribute to his worth, and to the estimation in which he was held by his fellow-men, our short memoir of Prof. Joseph Henry ends.